In considering the future of local authority health services Banks begins by posing what he regards as one fundamental question:

"Do we still believe that the prevention and cure of disease are distinct entities to be retained in separate administrative and technical compartments? If we do, then not only must the distinction between local authority and hospital and general-practitioner services be maintained but other new services, such as an industrial medical service, must be established and two kinds of worker, preventive and curative, must be trained. I suggest that the distinction is no longer tenable, and that prevention, diagnosis, treatment, and aftercare now form one continuous process and that we should revise our undergraduate and postgraduate teaching accordingly."

This was also the gist of the comments in the Dawson report[2] of 1920, and one of its principal suggestions was that the general practitioner should be trained in both prevention and treatment. This is still the answer to the present problem, and Banks's suggestion that the time has come to merge the maternal and infant welfare services with the hospital and paediatric services amounts to the exclusion of the family doctor. It is surely in the family rather than in the hospital that prevention and medical care should be conjoined.

Another difficulty in the logic of Banks's argument is that he appears to use the word "prevention" in the restricted sense of prevention of disease. He is quite entitled to do this, so long as he makes it clear that this limitation by no means applies to the work of local authorities and their medical officers. One of the main functions of these bodies is to promote health, and a primary interest of their medical staff, in schools and maternal and child welfare centres alike, is to give guidance to well mothers and their children, and to encourage, train, and comfort the healthy expectant mother. Much of this important work is best carried out by group teaching, and it is to be hoped that family doctors will take their full share in this—but it would be a mistake to make the hospitals the centres for such teaching.

## ERYTHROMYCIN

Of the "broad spectrum" antibiotics derived from soil streptomyces, chloramphenicol and aureomycin appeared in 1948 and terramycin in 1950. Assuming that any further such substances exist, the discovery of another was due, and it has duly appeared after a two-year interval. This is "erythromycin" (also named "ilotycin"), obtained from a strain of *Streptomyces erythreus* found in a soil sample from a small island in the Philippines. McGuire and his colleagues[1] of the Lilly Research Laboratories announce its discovery and describe its physical and chemical properties and antibacterial activity. Heilman, Herrell, and Wellman[2] give a general account of the behaviour of the new drug *in vitro*, and of the effects of its use in various patients in the Mayo Clinic, and Haight and Finland[3] describe a similar study at the Boston City Hospital.

Erythromycin is a basic substance, soluble in water to the extent of 2 mg. per ml., reasonably stable, and much more active in an alkaline than an acid medium. It has a bactericidal as well as bacteriostatic action: bacteria can acquire resistance to it—apparently with some rapidity—but this resistance is unrelated to that to any other antibiotic. Its "spectrum" resembles that of penicillin, Gram-positive organisms and a few of the more fastidious Gram-negative (*Neisseria* and *Haemophilus*) being sensitive, and coliform bacilli resistant. As with penicillin, haemolytic streptococci are highly sensitive and staphylococci rather less so: on the other hand, corynebacteria are exceptionally sensitive to erythromycin, and it is of some significance that Haight and Finland have cleared three persistent diphtheria carriers with it. The drug is administered by the mouth and behaves pharmacologically like the other newer antibiotics: therapeutic concentrations can easily be maintained in the blood, but at the same time, whether owing to incomplete absorption or to biliary excretion, there is a pronounced effect on the faecal flora, Gram-positive elements including clostridia being suppressed and coliforms unaffected. Daily dosage has varied from 1 to 3 g. and dosage intervals from 3 to 6 hours. The only factor limiting dosage is a tendency of the drug to cause vomiting and diarrhoea, no other toxic effect having been seen. Therapeutic results in pneumonia and in streptococcal throat infections have been as good as those obtainable with other antibiotics. A more important use for erythromycin is suggested by the successful treatment of two cases of staphylococcal septicaemia (one in each series) in which the organism was resistant to other antibiotics. On the other hand, failure in four out of five cases of endocarditis suggests that the capacity of bacteria to acquire resistance to this drug may intervene here: such a change was actually demonstrated in two of these cases.

First impressions are that erythromycin will be a valuable agent to hold in reserve for infections resistant to everything else. The general tendency among staphylococci and coliform bacilli to become resistant to the newer antibiotics as well as the old is illus-

[1] *Antibiot. and Chemother.*, 1952, **2**, 281.
[2] *Proc. Mayo Clin.*, 1952, **27**, 285.
[3] *New Engl. J. Med.*, 1952, **247**, 227.
[4] *Med. J. Aust.*, 1952, **1**, 870.
[5] *Antibiot. and Chemother.*, 1952, **2**, 279.

trated in the findings of Thomson,[4] who mentions incidentally that three patients at the Royal Prince Alfred Hospital, Sydney—two with pneumonia and one with septicaemia resulting from cross-infection with a totally resistant staphylococcus—all died. This gradual process of bacterial habituation to drugs during the years following their discovery makes it all the more necessary for fresh ones to be forthcoming at intervals, and it is reassuring to know that we have not reached the end of Nature's resources in this direction.

A leading article[5] in the journal containing the first announcement of this discovery mentions some interesting facts. It is well known that several firms in the U.S.A. are conducting extensive soil-screening programmes with samples from all over the world with a view to discovering new antibiotic-forming species. Erythromycin is, of course, the product of such a survey, and Eli Lilly & Co. are now added to the list of those fortunate concerns who have discovered a winner. But it is here stated that the number of firms engaged in such screening programmes is 16. Although the extent of these operations and the skill with which they are conducted are important, chance is perhaps still more so; a lucky dip on such a scale has never been seen before in anything connected with medical science. It is also mentioned that the monthly American production of penicillin is now 30 tons, of streptomycin 21, of aureomycin, chloramphenicol, and terramycin 24, while that of sulphonamides is, surprisingly enough, on the upgrade also. It would be interesting to know what proportions of these vast quantities of antibiotics (enough to supply a 10-g. course to over 90,000,000 patients annually) are being used for necessary purposes.

## CHLOROPHYLL

The sale of chlorophyll preparations in the United States is now enormous, and the increasing demand has astonished even those who sell them. One reason for this is the interest taken throughout North America in the use of drugs and disinfectants which may improve health. A second factor which has played a great part in accounting for the large sale of chlorophyll preparations is television. In many parts of the United States television sets are in nearly every home, and the firms selling chlorophyll preparations have made the fullest use of this medium to advertise their wares. Young men and young women appear on the screen to explain that "you must have a nice breath, I don't mean just for kissing," and that this is possible if you chew chlorophyll tablets or use tooth-paste containing chlorophyll or take chlorophyll in one way or another. This advertising has succeeded beyond all expectation. That it should have done so in the United States is the more surprising, where an understanding of scientific observations seems more widespread than in Britain. Many Americans must surely know that, in chewing six chlorophyll tablets each containing 100 mg., they are taking no more chlorophyll than is present in a fraction of an ounce of cabbage or other greenstuff.

That is one side of the picture. What is the other? In the first place evidence has been obtained that chlorophyll dressings reduce foul odours associated with wounds. This appears in so reliable a setting as a report to the Council on Pharmacy and Chemistry of the American Medical Association published in 1949.[1] The evidence was principally the general impressions of the staff and patients of surgical units; a few tests were made in which, for example, three to six independent observers were asked to classify the wounds in four grades according to smell. Gruskin,[2] who used his own patented "substantially pure water-soluble chlorophyll" in isotonic saline or in a lanoline ointment, stated that it was effective in reducing odour in over 1,200 cases of suppurative infection, mostly of ear, nose, and throat. The cases were not described. Goodman[3] found that application of 60 mg. of chlorophyll powder with 300 mg. of activated charcoal or kaolin reduced the odour of colostomy more than did the adsorbents alone.

It has been suggested that the reduction of odour in these cases is due to bacteriostatic action. L. W. Smith[4] found that *Pseudomonas pyocyanea* failed to grow or to survive in the presence of water-soluble chlorophylls. He considered that chlorophyll acted as an oxidizing agent which made the medium unfavourable for anaerobic growth. That is at least a rational suggestion. Bowers,[5] on the other hand, believed that the most important effect was stimulation of the tissue. In nasal infections the effect was too rapid to be accounted for by bacteriostasis or by

[1] Moss, N. H., Morrow, B. A., Long, R. C., and Ravdin, I. S., *J. Amer. med. Ass.*, 1949, **140**, 1336.
[2] *Amer. J. Surg.*, 1940, **49**, 49.
[3] *Surgery*, 1950, **28**, 550.
[4] *Amer. J. med. Sci.*, 1944, **207**, 647.
[5] *Amer. J. Surg.*, 1947, **73**, 37.
[6] *Canad. med. Ass. J.*, 1952, **67**, 58.
[7] Montgomery, R. M., and Nachtigall, H. B., *Postgrad. Med.*, 1950, **8**, 401.
[8] Westcott, F. H., *N.Y. St. J. Med.*, 1950, **50**, 698.
[9] Mitchell, W., *Retail Chemist*, 1952, **23**, 27, 65.
[10] *J. Lab. clin. Med.*, 1938, **24**, 230.
[11] *Medical Physics, Chicago*, 1944, p. 172.
[12] *C.R. Soc. Biol. Paris*, 1928, **99**, 1683.
[13] *Ned. T. Geneesk.*, 1951, **95**, 208.